CONCORDIA UNIVERSITY

Council of the Faculty of Engineering and Computer Science

Minutes of Meeting 2004-08

held

Friday, November 12, 2004, 10:00 a.m., H-769

Present:
N. Esmail *(Chair)*
M.O. Ahmad
S.T. Alkass
R. Bhat
J. Covey
M. Debbabi
K. Demirli
M. Di Pietrantonio
(Secretary of Council)
R. Dssouli
T. Fancott
T. Fevens
W. Ghaly
S.V. Hoa
N. Howe
J. Jasinski
F. Khendek
C. Lam
H.F. Li
W.E. Lynch
S. Mudur
M.D. Pugh
L. Quesnel
Y.R. Shayan
M. Singer
M.R. Soleymani
R.G. Zmeureanu

Observers:
S. Ghaderpanah
R. Melkonian
L. Zack

Regrets:
B. Ashtakala
S. Bergler
M. Chiem
M.R. Hajiaboli
L. Harris
I. Hassan
E. Lapointe
Q. Li
A. Limoges
B. Mackenzie
R. Mizouni
C. Paradisis
A. S. Ramamurthy
M. Zaheeruddin

1. Adoption of Agenda

Interchange items 5 and 6 on the Agenda to reflect the order in which the graduate curriculum changes are presented in the memo dated November 5, 2004.

Motion 2004-08-01 ***That the Agenda be adopted, as amended*** *(R. Bhat, R. Dssouli)*

Vote: Carried unanimously

2. Adoption of the Minutes of Meeting 2004-07

On page 13, the phrase "...on the basis that the Graduate Studies Committee provide parameters defining the nature of a research thesis of the master program…" should read: "...on the basis that the Graduate Studies Committee provide parameters defining the nature of a research thesis **in** the master program..."

Motion 2004-08-02 ***That the Minutes of Meeting 2004-07 (November 5, 2004) be adopted, as corrected*** *(R. Dssouli, W.E. Lynch)*

Vote: Carried unanimously

3. Chair's Remarks

The Chairman welcomed Dr. Martin Singer, Provost and Vice-President, Academic Affairs, as guest speaker to the Faculty Council for ENCS.

The Provost stated that this is a time of great change for Concordia as the University is at a critical moment in its history. In this regard, and with the input of the President, Vice-Presidents and Deans, he has prepared a document plotting the course for the future of Concordia (as it becomes one of Canada's leading universities), which he would like to share with ENCS Council members.

Context: The University is on the verge of a leadership change at the Presidential level as Dr. Lowy's term is coming to an end on May 31, 2005. In addition, two of the four Faculty Deans are being searched – the Dean of Arts & Science and the Dean of Fine Arts. In one year, Me Marcel Danis' second term will also come to an end. To note, Dean Esmail is closing in on the middle part of his second term. The Provost advised that pending these changes in leadership, critical decisions affecting the academic side of Concordia University will need to be made.

Number of Full-time Professors: Despite the hiring of more than 400 tenure-track and tenured professors during the past decade, the current number of full-time tenure-track professors (770) at Concordia is not very different from what it was eight years ago, principally because of a large number of retirements. However, the current total number of full-time faculty is inadequate in relation to the 40% increase in enrollment across the University. With full-time equivalent (FTE) students at 24,000, and projected FTE's increasing to 25,000 over the next year or two, the University will require a total of 1,000 full-time professors. As a result, a strategic plan including where to place, how to recruit and retain, and how to pay for the 400 new professors required (taking into account projected additional retirements), will need to be determined.

Size of the University: Another issue revolves around the size of the University. Seven or eight years ago, the University had 16,000 FTE students. Although the government predicted enrollment would decline, FTE's have increased to 24,000. The construction and acquisition of new buildings are premised on FTE's of 25,000 – a number on which the University is closing in. The proportion of graduate students to the total FTE's at Concordia is 12.5%. The President's Cabinet has tentatively set a goal to increase this to 20% of total student FTE's (20% x 25,000

FTE's = 5,000). Therefore, with FTE's projected to grow to 25,000 (including 5,000 FTE graduate students), the size and distribution of the student body will impact on the allocation of space in the University.

International Students: Well-respected worldwide, Concordia University has been among the most active universities on the international scene. In fact, Concordia may be better known in India and China, than it is in parts of Canada. Over the last number of years, international students have increased to more than 10% of the student population. That is, out of 32,000 credit students, 3,200 are international students – the majority of whom are from China, USA, and France. The President's Cabinet has decided to increase the percentage of international students from 10% to 15%. Although this will impact heavily on graduate programs, and have some impact on undergraduate programs, members of the President's Cabinet agree that between Canadian students outside Quebec, and international students, the University can control its student population notwithstanding a declining traditional student population in Quebec.

Quality of the University: The Provost advised that library resources are inadequate due to insufficient provincial funding. Academic advising also needs to improve across the University. On the other hand, the growth in our research dollars has resulted from the Federal Government's investment in research; the hiring of a new generation of (420) professors; and a change in the overall culture to encourage greater research activities via CFI, CURC, CRC…etc. The University's $37 million in external research funding should increase to a minimum of $50 million per year. Although we have significantly improved from $17 million, there is still a lot of work to be done before Concordia can measure itself to the standards of comparable sister institutions. The Provost will be taking a number steps to encourage this change.

Image: According to the Provost, Concordia's image external to the University community needs to improve in order to project just how good an institution it really is. A Communication Consultant has been mandated to help in this regard.

Organizational Structure: Concordia is one of the least organizationally complex universities in Canada proportional to its size (i.e. 32,000 students spread across 4 faculties). A review of the entire academic organization of the University will occur over the next 1.5 years, prior to the search for a replacement for Dean Esmail and the Dean of JMSB. This review may or may not result in change. Within ENCS, the obvious question is whether Computer Science should remain part of the Faculty. The principle argument for change revolves around the risk associated with having only four faculty Deans – in fact, the risk is even greater if one of the Deans is not up to the job. Therefore, by spreading the risk, some argue that there is an increased chance that the University will function effectively.

The Provost advised Council members that he is very proud of the Faculty's accomplishments. He also acknowledged the remarkable job that Dean Esmail has done with regards to bringing the Faculty from where it was to where it is. However, the following items of concern need to be addressed:

- Enrollment
- Rational use of space
- Finances

Enrollment: Although national trends are down, the drop of enrollment in the Faculty will have a negative impact on the University, especially since this is the last year that the University is expected to receive full funding for new students, and lose full funding for a drop in students. The Provost remarked that all universities in Quebec used to be funded on the basis of completely arbitrary historical budgets. Therefore, every student lost or gained represented a loss or gain of 58% of an FTE (i.e. marginal rate of financing). However, five or six years ago, the government switched to a system that both ENCS and A&S took great advantage of, exponentially increasing the size and funding of both Faculties as a result. With this system apparently coming to an end on June 1, 2005, the drop in enrollment this Fall represents a loss of over $1 million dollars to the Faculty. The Provost has asked the Dean of ENCS to see what can be done to partially compensate for this loss (without compromising standards) with admissions for January 2005.

Rational use of space: The academic sector of the University has not coordinated its evaluation of the allocation and use of space to the extent that the Provost believes is now necessary. According to Dr. Singer, it is difficult to respond to demands for additional space because the standards of use of space across faculties are so different. For instance, the University's position in arguing for additional space based on ENCS enrollment (notwithstanding the construction of the Integrated Engineering, Computer Science and Visual Arts Complex), will be diminished if the Faculty is perceived as shrinking. Dr. Singer has asked for an analysis of space use by Faculty in relation to FTE student enrollments.

Finances: The Provost advised that the University appears to be heading towards deficit years. Uncontrollable factors which may impact negatively on the University include: the change in the government's funding formula effective June 1st, 2005; the value of the basic FTE; and the notion of marginal funding. As this will be the final year of full funding, the benchmark set will become our base – funding below or above the base year will be at the marginal rate.

Before closing, the Provost mentioned that the mandate of the Graduate School is changing. In this regard, he has asked the Deans and Associate Deans to become more pro-active in advocating graduate studies and setting standards for quality control. The Provost is moving towards a decentralization of the admissions and registration process in graduate studies. A committee has been set up to determine how this change will shift the responsibility onto each respective faculty, in line with its given resources and graduate goals. As this change will impact every professor, the Provost is asking everyone to be patient while this process is underway.

The Provost concluded his address by stating that this is a moment of great opportunity, but also one of challenge. The Chairman thanked the Provost for acknowledging the accomplishments of the Faculty of ENCS. In this regard, the

Chair took the opportunity to acknowledge the efforts of all faculty and staff members in realizing such accomplishments.

4. **Election of a Faculty-wide Representative on the Advisory Search Committee for Chair, Department of ECE**

Motion 2004-08-03 ***That the nomination of Dr. T. Radhakrishnan as a representative on the Advisory Search Committee, ECE Chair, for the faculty-at-large, be approved by Council*** *(T. Fancott, S.V. Hoa)*

Vote: Carried unanimously

5. **Graduate Curriculum Changes from the Department of CSE**
(Document ECFC 2004-08-02)

Dr. Bhat moved **Document ECFC 2004-08-02,** reflecting the changes and curriculum proposals submitted by the Department of Computer Science and Software Engineering.

Program Changes:

p. 4 Reflect deletion of existing course **COMP 6451** ***User Interfaces Development Tools and Techniques*** in Topic Area C04 – *Software Systems and Languages.*

p. 5 Reflect addition of new course **COMP 6711** ***Computational Geometry*** in Topic Area C07 – *Artificial Intelligence and Man-Machine Communication.*

p. 6 Reflect:

(i) Change in existing title of Topic Area C08 – *Courses From Electrical and Computer Engineering* to new title **C08 – Bioinformatics;**

(ii) Addition of two new courses: **COMP 6811** ***Bioinformatics Algorithms*** and **COMP 6821** ***Bioinformatics Databases and Systems*** in Topic Area C08 – (under new title): *Bioinformatics;*

(iii) Deletion/(Shifting)/(Moving) of two existing courses currently listed under Topic Area C08 – (with old title) *Courses From Electrical and Computer Engineering:* ELEC 6851 *Introduction to Telecommunication Networks* and COEN 7311 *Protocol Design and Validation.*

p. 7 Reflect:

(i) Addition of two existing courses: ELEC 6851 *Introduction to Telecommunication Networks* and COEN 7311 *Protocol Design and Validation* deleted/shifted/moved from Topic Area C08 – (with old title) *Courses From Electrical and Computer Engineering* to Topic Area C09 – *Cognate Courses from Engineering.*

Course Deletion(s):

p. 8 Deletion of existing course **COMP 6451** ***User Interfaces Development Tools and Techniques.***

Course Changes:

p. 9 Introduction of new course **COMP 6711** ***Computational Geometry.***

p. 10 Introduction of new course **COMP 6811** ***Bioinformatics Algorithms.***

p. 11 Introduction of new course **COMP 6821** ***Bioinformatics Databases and Systems.***

N.B. Course title for **ELEC 6851** ***Introduction to Telecommunication Networks*** should read ***Telecommunication Networks,*** as per change approved by Senate.

Motion 2004-08-04 ***That the program/course changes and course deletions for the Department of CSE, outlined on pages 2-11 of Document ECFC 2004-08-02, be approved by Council*** *(R. Bhat, C. Lam)*

Vote: Carried unanimously

Changes proposed to **Document ECFC 2004-08-02:**

- That Council adopt the original proposal submitted by the Department of CSE which recommends creating a new Topic Area C12 in order to accommodate the existing courses in C08 (ELEC 6851 and COEN 7311), and move them from Topic Area C08 to C12.

  Rationale: Although ECSGSC suggested that it would be simpler to move from Topic Area C08 to C09, this change would limit graduate students with regards to the number of courses taken out of Topic Area C09.

- That coursework for C08 be changed to C12 in the Calendar.

  Rationale: Editorial change

Motion *That Document ECFC 2004-08-02 be approved by Council, as amended*
2004-08-05 *(R. Bhat, C. Lam)*

Vote: Carried unanimously

6. **Graduate Curriculum Changes from the Department of MIE**
(Document ECFC 2004-08-01)

Dr. Bhat moved **Document ECFC 2004-08-01** reflecting changes and curriculum proposals submitted by the Department of MIE.

Program Changes:

p. 3 Reflect addition of new course **ENGR 6291** ***Rheology*** in Topic Area E04 - *Fluid Mechanics.*

p. 4 Reflect addition pf new courses **ENGR 6491** ***Discrete System Simulation*** in Topic Area E12 – *Industrial Engineering.*

Course Changes:

p. 5 Introduction of a new course **ENGR 6291** ***Rheology.***

p. 6 Introduction of a new course **ENGR 6491** ***Discrete System Simulation.***

p. 7 Deletion of course prerequisite requirement for **MECH 6451** ***Computer-Aided Mechanical Design.***

p. 8 Change in course prerequisite requirement for **MECH 6611** ***Numerically Controlled Machines.***

An amendment to the proposed text for **MECH 6451** (page 8) was suggested:

- That the phrase "A project" be replaced by "A project is required" or "Part of the course is a project"

Rationale: Although this is a standard phrase used for all graduate courses, it is not clear for students/readers that **MECH 6451** is not a project course.

Motion ***That the program and course changes for the Department of MIE, outlined***
2004-08-06 ***on pages 3-8 of Document ECFC 2004-08-01, be approved by Council, as amended*** *(R. Bhat, S.V. Hoa)*

Vote: Carried unanimously

7. CIISE Graduate Programs in Quality Systems Engineering
(Document ECFC 2004-08-03)

Dr. Bhat moved **Document ECFC 2004-08-03**, reflecting CIISE's proposal to offer two Master's programs in Quality Systems Engineering with a strong research and application orientation. These two programs are:

- ✓ Master of Applied Science in Quality Systems Engineering (45 credits)
- ✓ Master of Engineering in Quality Systems Engineering (45 credits)

Dr. Dssouli advised Council members that each section of Document 2004-08-03 is similar in structure and content, although the first section focuses on the M.A.Sc. program, and the second focuses on the M.Eng. program.

The two programs share the same:

- Motivation and justification
- Ten core courses
- Human resource needs
- Teaching space
- Equipment needs

Although the original plan involved introducing only a M.A.Sc. program, in later discussions held with the management of various departments within the Faculty, it appeared more advantageous to leverage the M.A.Sc. program by offering an additional M.Eng. program in Quality Systems Engineering. The rationale underlying this proposition follows:

- Zero-cost operation
- Leverage to the course sets of other ENCS departments for the elective component of the M.Eng. program
- Attract a higher student population to the new and existing courses, resulting in more FTE's

Dr. Mourad Debbabi, Professor and Associate Director of the CIISE, presented the proposed graduate programs in Quality Systems Engineering.

➢ Proposal for new M.A.Sc. Program in Quality Systems Engineering

Rationale:

The establishment of a M.A.Sc. Program in Quality Systems Engineering will heighten the visibility of the Engineering and Computer Science Faculty, as well as Concordia University. In fact, the proposed program – the first of its kind in Quebec and Canada – would establish Concordia University as a leading contributor to the academic standing of the field, in addition to crystallizing the ideas, plans and mission underlying the genesis of the Concordia Institute for Information Systems Engineering.

The academic aim of this program is to provide students with the skills, knowledge, cutting-edge technology, know-how and best practices necessary to design, model, analyze and manage quality systems.

The program will endow graduates with a complete expertise in the engineering of quality systems. This is mainly due to the fact that the program includes an integrated set of complementary, mandatory and non-overlapping courses addressing all aspects of quality systems engineering.

Social, Economic and Cultural Value:

The development of a M.A.Sc. Program in Quality Systems Engineering is essential for training highly qualified personnel in this area.

➢ **The relevance of this program stems from:**

- The increasing need of corporations for highly-qualified personnel in this area
- The growth complexity of systems
- The absence of such training in academia

➢ **The timeliness of this program stems from:**

- The availability of the body of knowledge after two decades of quality initiatives
- The presence of the needed pool of multi-disciplinary expertise within CIISE
- The wide adoption of quality standards by Quebec and Canada corporations

Justification and Related Courses:

As the 10 courses proposed are new, there will be no overlap with existing undergraduate courses currently offered within MIE's undergraduate programs. In fact, the new courses proposed target a population that has not been exposed to total quality concepts.

List of Courses by Topic Areas:

Core Courses:

➢ **E68** – *Topic Area: Quality Systems Engineering*

INSE 6210	Total Quality Methodologies in Engineering	(4 credits)
INSE 6220	Advanced Statistical Approaches to Quality	(4 credits)

INSE 6230	Total Quality Management Project	(4 credits)
INSE 6240	Executive Communication	(0 credits)

- **Concentration Courses:**

➢ *Concentration in Software Quality*

INSE 6250	Quality Methodologies for Software	(4 credits)
INSE 6260	Software Quality Assurance	(4 credits)

➢ *Concentration in System Quality*

INSE 6270	Quality-based Systems Engineering	(4 credits)
INSE 6280	Quality Assurance for Systems Engineering	(4 credits)

➢ *Concentration in Procurement and Supply Chain Management*

INSE 6290	Quality in Logistics and Supply Chain Management	(4 credits)
INSE 6300	Quality Assurance in Supply Chain Management	(4 credits)

Prediction on Population:

Considering the needs that have been formulated by reliable sources within government and industry, it is anticipated that the enrollment for the proposed program will be very high. A very conservative estimate of the enrollment plans is depicted in the table contained in **Document ECFC 2004-08-03**.

Resource Implications:

- Two full-time tenure-track faculty positions (one in supply chain management; the other in quality systems engineering). One of these positions will occupy the Industrial Research Chair which CIISE will hold with Sikorsky and P&WC. The cost of the IRC is nil for at least 5 years.
- Course sections for the equivalent of ten, 4-credit core and concentration courses will be required to implement this master program.
- A one quarter-time (0.25) Graduate Program Assistant position.
- A one quarter-time (0.25) Technical Staff member.

➢ **The required equipment and training facilities include:**

- One dedicated teaching laboratory space for 30 students.
- One computer server.
- Quality software:
    - Six-sigma and ACE software.
    - Quality management software.
    - Statistical quality control software.

- Documentation:
    - Quality standards.
    - Quality assessment methodologies.
    - Quality textbooks.

➢ Proposal for new M.Eng. Program in Quality Systems Engineering

Rationale:

The establishment of a M.Eng. Program in Quality Systems Engineering will heighten the visibility of the Engineering and Computer Science Faculty, as well as Concordia University. In fact, the proposed program – the first of its kind in Quebec and Canada – would establish Concordia University as a leading contributor to the academic standing of the field, in addition to crystallizing the ideas, plans and mission underlying the genesis of the Concordia Institute for Information Systems Engineering.

The academic aim of this program is to provide students with the skills, knowledge, cutting-edge technology, know-how and best practices necessary to design, model, analyze, and manage quality systems.

The program will endow graduates with a complete expertise in the engineering of quality systems. This is mainly due to the fact that the program includes an integrated set of complementary, mandatory and non-overlapping courses addressing all aspects of quality systems engineering.

Social, Economic and Cultural Value:

The development of a M.Eng. Program in Quality Systems Engineering is essential for training highly qualified personnel in this area.

➢ The relevance of this program stems from:

- The increasing need of corporations for highly-qualified personnel in this area
- The growth complexity of systems
- The absence of such training in academia

➢ The timeliness of this program stems from:

- The availability of the body of knowledge after two decades of quality initiatives
- The presence of the needed pool of multi-disciplinary expertise within CIISE
- The wide adoption of quality standards by Quebec and Canada corporations

Justification and Related Courses:

As the 10 courses proposed are new, there will no overlap with existing undergraduate courses currently offered within MIE's undergraduate programs. In fact, the new courses proposed target a population that has not been exposed to total quality concepts.

List of Courses by Topic Areas:

- **Core Courses**:

➢ **E68** – *Topic Area: Quality Systems Engineering*

INSE 6210	Total Quality Methodologies in Engineering	(4 credits)
INSE 6220	Advanced Statistical Approaches to Quality	(4 credits)
INSE 6230	Total Quality Management Project	(4 credits)
INSE 6240	Executive Communication	(0 credits)

- **Concentration Courses**:

➢ *Concentration in Software Quality*

INSE 6250	Quality Methodologies for Software	(4 credits)
INSE 6260	Software Quality Assurance	(4 credits)

➢ *Concentration in System Quality*

INSE 6270	Quality-based Systems Engineering	(4 credits)
INSE 6280	Quality Assurance for Systems Engineering	(4 credits)

➢ *Concentration in Procurement and Supply Chain Management*

INSE 6290	Quality in Logistics and Supply Chain Management	(4 credits)
INSE 6300	Quality Assurance in Supply Chain Management	(4 credits)

Prediction on Population:

Considering the needs that have been formulated by reliable sources within government and industry, it is anticipated that the enrollment for the proposed program will be very high. A very conservative estimate of the enrollment plans is depicted in the table contained in **Document ECFC 2004-08-03**.

A survey is currently being conducted among more than 120 graduate and undergraduate students within the Faculty of ENCS.

Resource Implications:

- Two full-time tenure-track faculty positions (one in supply chain management; the other in quality systems engineering). One of these positions will occupy the Industrial Research Chair which CIISE will hold with Sikorsky and P&WC. The cost of the IRC is nil for at least 5 years.
- Course sections for the equivalent of ten, 4-credit core and concentration courses will be required to implement this master's program.
- A one quarter-time (0.25) Graduate Program Assistant position.
- A one quarter-time (0.25) Technical Staff member.

➢ **The required equipment and training facilities include:**

- One dedicated teaching laboratory space for 30 students.
- One computer server.
- Quality software:
    - Six-sigma and ACE software.
    - Quality management software.
    - Statistical quality control software.
- Documentation:
    - Quality standards.
    - Quality assessment methodologies.
    - Quality textbooks.

Dr. Debbabi concluded his presentation by stating that the feedback received from industry has been very positive. In fact, employers are very enthusiastic as the training provided by such programs matches the profiles of potential employees.

Dr. Dssouli distributed a letter of support from IBM, in this regard.

Changes proposed to **Document ECFC 2004-08-03:**

➢ Concentration courses for graduate programs should be referred to core courses

Rationale: Editorial change

➢ INSE 6240 (0 credits assigned): Question: Will the course be run as a lecture course? Answer: It may be presented as a series of seminars, however, a set of courses would be preferable. Although the format of INSE 6240 is to be determined, the course will require the presentation of a project.

Rationale: Students will acquire the essential communication and negotiation skills required by project managers

- The Provost inquired as to the number of full-time professors required for each graduate program – i.e. is it a total of 12 professors or the same six for both programs?

  Rationale: Clarify resource implications for Senate purposes

Motion 2004-08-07 ***That Document ECFC 2004-08-03 outlining the proposals for the new M.A.Sc. and M.Eng. programs in Quality Systems Engineering be approved by Council, subject to minor editorial changes*** *(R. Bhat, R. Dssouli)*

Vote: Carried unanimously

Motion 2004-08-08 ***That the program and course changes for the proposed M.A.Sc. and M.Eng. in Quality Systems Engineering be approved by Council, as presented in Document ECFC 2004-08-03*** *(R. Bhat, R. Dssouli)*

Vote: Carried unanimously

8. Other Business:

The Provost advised that in view of Dr. Lowy's injury, he chaired the last Senate Steering Committee on behalf of the President. A debate ensued as to whether Senate should hold a meeting on November 19 or November 26, 2004. On the one hand, the Office of the Registrar is arguing that Senate convenes on November 19, 2004 since the Fall 2004 graduation ceremony is scheduled on Dec 2, 2004. The Vice Provost, Curriculum, is requesting that Senate meets on November 26, 2004, in order to approve the curriculum in time for next year.

In this regard, the Senate Steering Committee identified 3 options for Senate:

1) Hold two meetings to satisfy both groups.
2) Meet on November 19, 2004, and mandate the Senate Steering Committee to approve/not approve curriculum items on behalf of Senate on the understanding that for legal reasons, documents will only come to Senate in January 2005.
3) Schedule next meeting in January 2005.

The Senate Steering Committee recommended the adoption of Option 2.

Should the MEQ not approve CIISE's new graduate programs in time for the Fall 2005 session, the Provost expressed concern with regards to offering the new courses in September 2005.

- Will FTE's be funded?
- Will a graduation bonus be granted?
- Can degrees be awarded?

Awaiting the MEQ's approval – a process which can take up to 4 or 5 years – will only increase the deficit of the academic budget. In this regard, the Chairman referred to the Faculty's Software Engineering program which the MEQ approved two graduating classes after the program was introduced in 1998.

The Provost advised that prior to the next Senate meeting, he needs to inform himself with regards to the legal/other implications of proceeding with the implementation of new programs without approval from the MEQ.

9. Adjournment:

The meeting was adjourned at 12:25 p.m.

Mary Di Pietrantonio

Mary Di Pietrantonio
Secretary of Council